

CLAIMS

1. Apparatus for transferring cryogenic fluid from a first vessel to a second vessel in an off-shore environment, comprising a partly submerged floating dock, variable buoyancy means operable to alter the draught of the dock to enable engagement of the dock with the second vessel, a single point mooring system attached to the dock, at least one rigid cryogenic pipeline attached between the first vessel and the dock via flexible connection means, and means for transferring cryogenic fluid from the dock to the second vessel.

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2. Apparatus as claimed in claim 1, further comprising two or more rigid pipelines between the dock and the first vessel and means to enable the return of fluid received at the dock from one pipeline to a second pipeline.

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3. Apparatus as claimed in claim 1, wherein the single point mooring system comprises a turret rotatably mounted to the dock and anchor lines attached to the turret.

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4. Apparatus as claimed in claim 1, wherein the dock comprises a floor structure engageable against the hull of the second vessel and a plurality of columns projecting upwardly from the floor structure, wherein the cross-sectional area of the columns at the water line is in the region of 29 to 25m².

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5. Apparatus as claimed in claim 1, wherein the dock is designed to accommodate tankers in the range from 50,000m³ to 150,000m³.

6. Apparatus as claimed in claim 1, wherein the dock further comprises a position control system and thrust producing devices.

7. Apparatus as claimed in claim 3, wherein the turret is mounted with its
5 centerline forward of a leading edge of the dock.

8. Apparatus as claimed in claim 3, wherein the turret is mounted with its
centerline rearward of a leading edge of a dock by approximately 20 to 50% of the
length of the dock.
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9. Apparatus as claimed in claim 6, wherein the variable buoyancy means
comprises ballast compartments extending between the columns above the water line.

10. Apparatus as claimed in claim 6, wherein the variable buoyancy means
15 further comprises ballast compartments located in the floor structure beneath the water
line.